

**What is claimed is:**

1. A method for manufacturing MTJ cell of magnetic random access memory (MRAM) comprising:
  - 5 forming a stacked structure of a pinned magnetic layer, an alumina layer and a free magnetic layer;
  - forming a hard mask layer on the stacked structure;
  - patterning the hard mask layer via a photoetching process using a MTJ cell mask to form a hard mask layer
  - 10 pattern exposing a portion of the free magnetic layer;
  - subjecting the exposed portion of the free magnetic layer to a halo ion implant process;
  - oxidizing the exposed portion of the free magnetic layer; and
  - 15 patterning a MTJ cell by etching the stacked structure.
2. The method according to claim 1, wherein the halo ion implant process is performed in a manner that a tilt angle ranges from 0 to 90° and a ion is implanted from four directions.